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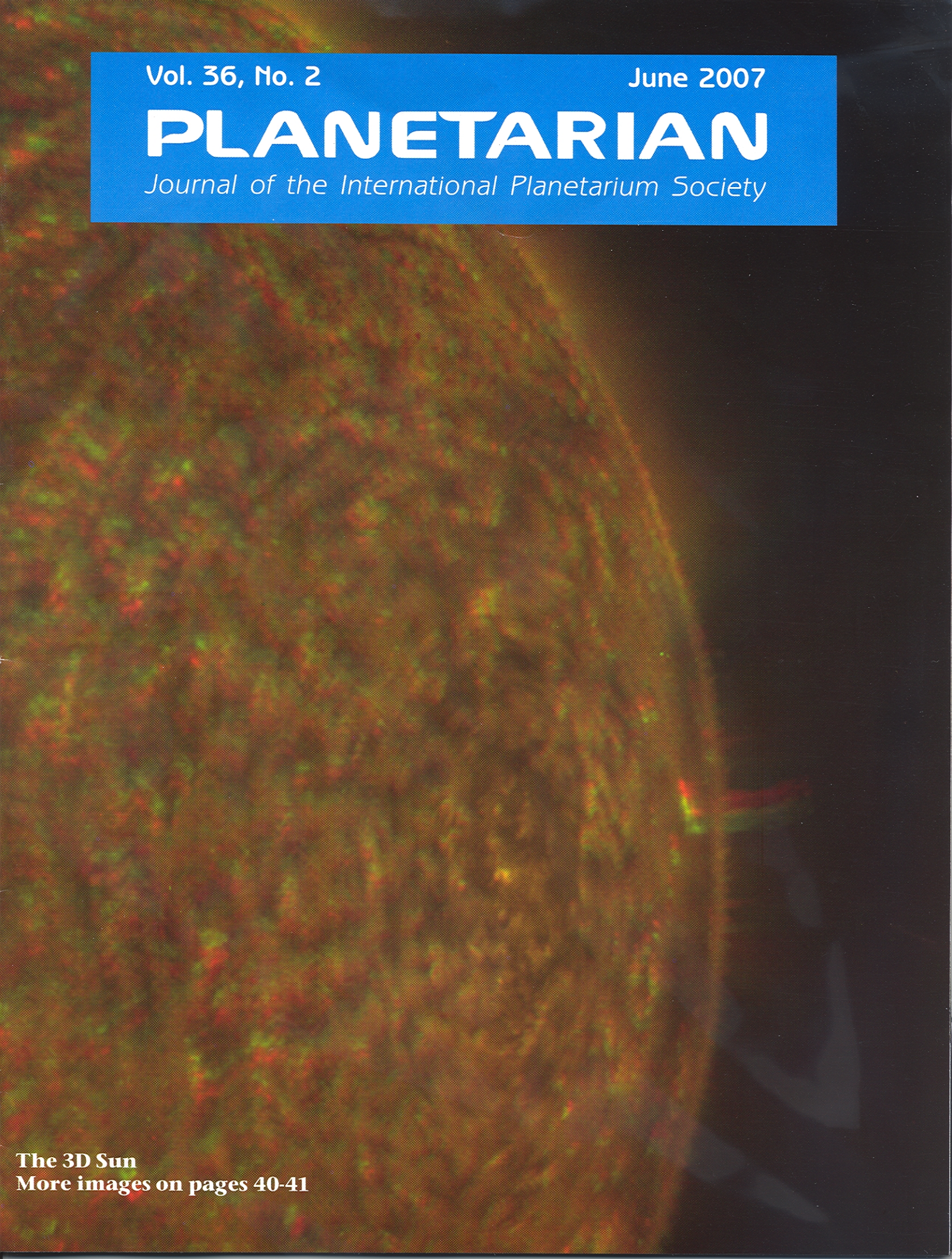

The 3D Sun
More images on pages 40-41

NASA Space Science News

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Summer looms, and with it a number of much anticipated space events and several milestone anniversaries.

Dawn, which will explore the asteroids Vesta and Ceres, is now scheduled to launch no earlier than June 30, 2007. The spacecraft arrived in Florida on April 10 of this year to undergo final preparations for launch. Quoting project manager Keyur Patel of JPL on the Dawn website, "Dawn only has two more trips to make. One will be in mid-June, when it makes the 15-mile journey from the processing facility to the launch pad. The second will be when Dawn rises to begin its eight-year, 3.2-billion-mile odyssey into the heart of the asteroid belt." Speaking of the asteroid belt, the Dawn education team has developed a number of activities that include making...ta da... an asteroid belt. Instructions for this and other activities can be found in the Kids section of the Dawn website (dawn.jpl.nasa.gov).

It's Been 10 Years Already

July 4 marks the 10-year anniversary of the landing of Mars Pathfinder and its sidekick, the Sojourner rover. It's hard to believe it has been 10 years since we sat listening for the tones from the spacecraft to tell us that each step of the landing sequence had been accomplished. Some months before that, I was present when the then-NASA associate administrator for space science first saw the now-famous "entry, descent, and landing" animation. His eyes got as big as saucers when he saw those 15-story airbag bounces. Fairly new in his job at that time, I'm not sure he fully realized until just then exactly how JPL planned to land that multimillion dollar baby. And that he would be the one at the news podium delivering the news, good or bad. Fortunately, it was good news and the rover went on to capture hearts around the world with its exploration of its little piece of Ares Vallis. The original Mars Pathfinder website is still accessible if anyone wants to take a waltz down memory lane (mpfwww.jpl.nasa.gov).

The Next Scout to Mars

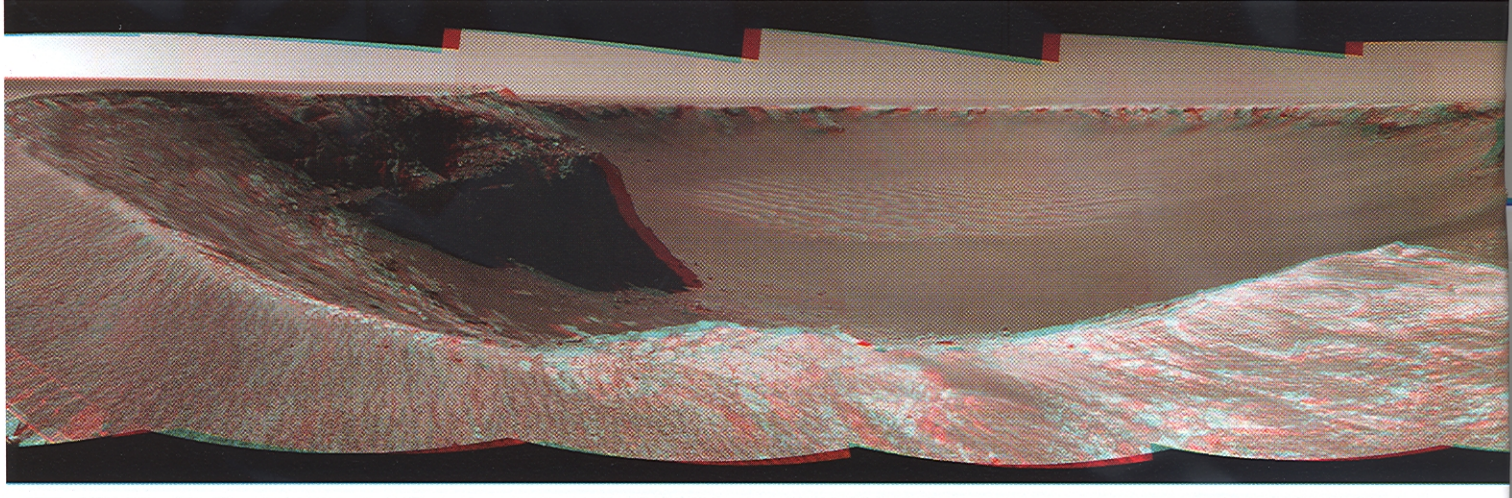
Fast forward, and the next Mars scout, Phoenix, which will land near Mars' northern polar cap, is scheduled for launch no earlier than August 3. It is scheduled to land on May 25, 2008, which is Sunday of the US's annual Memorial Day weekend. Principal Investigator Peter Smith is at the University of Arizona in Tucson (I often need to remind myself that "Phoenix is in Tucson, Phoenix is in Tucson," as opposed to other Mars research teams at Arizona State University, which is in Phoenix...actually Tempe, a suburb of Phoenix.)

Also quoting liberally from the Phoenix website: Phoenix will land on the icy northern pole of Mars between 65- and 75-north latitude. Interesting work is going on now to select a landing site...images from Mars Reconnaissance Orbiter showed that an early candidate site is extremely rugged, which did not bode well for a safe landing. During its three-month mission, Phoenix will dig trenches up to half a meter into the layers of water ice. These layers could contain organic compounds that are necessary for life. Selected samples will be heated to release vapors to determine their chemical composition and other characteristics. I'm wondering how hard it will be for the rover-savvy public to understand that Phoenix is strictly a lander . . . it works where it lands, with no capability to move to other sites. For more information on the Phoenix mission, visit phoenix.lpl.arizona.edu.

STS-118 to Fly in August

The STS-118 shuttle mission is currently scheduled to launch no earlier than August 9. Educator astronaut/mission specialist Barbara Morgan will be on board to operate the robotic arm as part of the assembly of the International Space Station. STS-118 mission information is on-line at www.nasa.gov/mission_pages/shuttle/shuttlemissions/sts118/index. The best way to stay informed about the STS-118 educational activities is to subscribe to the NASA Education Express listserve at www.nasa.gov/education/express.

Late summer also marks the 30-year anniversary of the launch of the twin Voyager spacecraft (Voyager 2 on August 20, 1977; Voyager 1, September 5, 1977). After their historic visits to Jupiter and Saturn, Voyager 2 went on to Uranus and Neptune and both spacecraft are now exiting our solar system. Voyager 1 became the most distant human-made object in the cosmos in 1998, and in August 2006 it passed the 100 AU mark. Traveling at about 1.61 million kilometers per day (1 million miles), Voyager 1 is now in an area called



the heliosheath, the zone at the edge of our solar system where the Sun's influence wanes. Cared for by a skeleton crew of about 10 people, Voyager 1 is expected to enter true interstellar space sometime in the next 10 years.

Of course, this fall marks the 50th anniversary of the launch of Sputnik, counted by some as the beginning of the Space Age. What an exciting time of exploration to have witnessed!

STEREO: Big in 3D

Causing a big buzz this spring are the 3D images returned by NASA's twin Solar Terrestrial Relations Observatories (STEREO); see www.nasa.gov/mission_pages/stereo. The timing is excellent since it seems that 3D is making a comeback from its geeky early days. The STEREO team has listened to many of you in the museum and planetarium world and is making the images available in a variety of formats to accommodate as many viewing systems as possible, from homemade red/cyan glasses to polarized to high-tech computer-synchronized liquid crystal glasses. Full frames for both right and left eyes are available, as well as anaglyphs. According to Solar System Visualization lead Eric de Jong at JPL, the very best way to experience these images is using liquid crystal glasses that shutter at 120 Hertz, so there's no flickering whatsoever, and even better if projected at full resolution by an IMAX projector.

Galleries of 3-D images from around the solar system include NASA's Planetary Photojournal:

photojournal.jpl.nasa.gov/feature/anaglyph

photojournal.jpl.nasa.gov/feature/3D

photojournal.jpl.nasa.gov/feature/3-D

(By the way, if you haven't discovered it already, a neat trick for searching the Photojournal is to go to the top page (photojournal.jpl.nasa.gov), then click on "Other Query Methods" at the bottom of the page. That will take you to the detailed query page, which gives you several search options. My favorite is the fifth one, "Search by Feature Name," because this is actually a full-text search of the site. So say you want an image of dunes, just type in "dune," and you will get thumbnails of every image in the database that has the text "dune" associated with it. Great for doing comparative planetology!

The Lunar and Planetary Institute also put out a "3D Tour of the Solar System" CD several years ago. A demo tour is online at www.lpi.usra.edu/resources/stereo_atlas/SS3D.HTM.

Apollo 12 lunar astronaut Alan Bean performs scientific tasks in November 1969 in eastern Oceanus Procellarum. (Source: www.lpi.usra.edu/resources/stereo_atlas/HTDOCS/A2AS.HTM) Credit: NASA/LPI

With that, I wish you a good summer. ☆

BELOW: NASA's Mars Exploration Rover Opportunity used its navigation camera to take the images combined into this stereo view of the rover's surroundings at Victoria Crater on sol (or Martian day) 959 of its surface mission. This view is presented as a cylindrical-perspective projection with geometric seam correction. Right and left-eye views are also available. Source: photojournal.jpl.nasa.gov/tiff/PIA01893.tif Credit: NASA/JPL-Caltech